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CERTIFICATE

4

This certificate is issued in support of an application for Patent registration in a country outside New Zealand pursuant to the Patents Act 1953 and the Regulations thereunder.

I hereby certify that annexed is a true copy of the Provisional Specification as filed on 1 June 2000 with an application for Letters Patent number 504890 made by REPLICANT LTD.

Dated 2 August 2000.

Neville Harris
Commissioner of Patents

COMMISSIONER OF PATENTS, TRADE MARKS & DESIGNS
NEW ZEALAND

Patents Form No. 4

PATENTS ACT 1953

PROVISIONAL SPECIFICATION

A FIBRESCOPE TRAINING MANNEQUIN

We, **REPLICANT LIMITED**, of Unit 4, 131 Park Road, Miramar, Wellington, New Zealand
do hereby declare this invention to be described in the following statement:

FIELD OF INVENTION

The invention comprises a fibrescope training mannequin for use in training physicians in the use of fibrescope for laproscopy for example, or improving or maintaining physicians, skills of dexterity in the use of fibrescopes.

BACKGROUND OF INVENTION

A fibrescope comprises a length of optical fibre with a small "eye" lens at one end which is passed through the oral or nasal cavity and into a patient, and a larger viewing lens at the other end (or alternatively the fibrescope may be connected to a system for displaying the image on a VDU or similar). Physicians require training in the use and manipulation of fibrescopes. Physicians who use fibrescopes regularly may maintain ongoing dexterity but physicians who use fibrescopes less frequently may require practice to maintain their dexterity in the use of a fibrescope, from time to time. Insertion of a fibrescope requires that the eye end of the fibrescope is passed through the oral or nasal cavity and that as the fibrescope is slowly inserted further into the patient it is manipulated/twisted to thereby move and appropriately position the eye end of the fibrescope.

SUMMARY OF INVENTION

The invention provides an improved or at least alternative form of fibrescope training mannequin.

In broad terms the invention comprises a fibrescope training mannequin comprising mouth and/or nose apertures leading to a network of multiple pathways through which the fibrescope may be manipulated, formed by connection together of number of individual hollow branch components.

Preferably at least some or all of the branch components are of a Y-configuration comprising an entry end and two or more exit ends, which may be connected together sequentially to form an expanding number of pathways in two or three dimensions.

Optionally the mannequin also comprises a number of cap components connectable to close the exposed exit ends of the branch components. The branch components may also comprise other apertures into the branch components to which the cap components may be fitted.

Preferably one or a number of predetermined symbols, objects or images is carried or inserted on each cap component.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be further described with reference to the accompanying drawings by way of example and without intending to be limiting, which show preferred forms of fibrescope training mannequins of the invention. In the drawings:

Figure 1 is a perspective view of a first preferred form fibrescope training mannequin open,

Figure 2 shows a single branch component of the mannequin of Fig. 1 and a cap component,

Figure 3 is a pathway "map" as will be referred to further,

Figure 4 is a view from one end of a number of components connected together to form a simple branch network, of another preferred form of mannequin,

Figure 5 is a side view of the mannequin of Figure 4,

Figure 6 is a longitudinal cross-section of the mannequin of Figure 4,

Figure 7 is a cut away perspective view of part of the mannequin of Figures 4 to 6,

Figure 8 shows a Y-branch component of the mannequin of Figures 4 to 7, and

Figure 9 is an exploded view of another component of the branch network of the mannequin of Figures 4 to 8.

DETAILED DESCRIPTION OF PREFERRED FORM

The preferred form fibrescope training mannequin shown in Figure 1 comprises a "body" comprising a head section 1 and chest section 2, which includes a chest lid 3. Apertures 4 and 5 in the head section 1 represent oral and nasal apertures in a patient, and lead to tube 6 extending into the mannequin from the head section 1 as shown.

A branch network 7 within the mannequin body is made up of a number of individual branch components connected together to form an expanding number of pathways from the tube 6, through which a user may practice in manipulating a fibrescope in training with the mannequin.

Figure 2 shows a single branch component of the mannequin of Figure 1 which is of a general Y-configuration having a hollow interior and comprising an entry end 8 and exit ends 9. In making up a network of branch components, a first component is connected or plugged onto the tube 6 from the head section of the mannequin by pushing the entry end 8 of the first component over the tube 6, and then other similar branch components may be connected to each of the exit ends 9 of the first branch component, and again, to form a network of branch components providing an expanding number of pathways. The exit ends of the final branch components in the network may be closed by caps 10 as shown in Figure 2. Typically the branch components and caps will be formed from plastic by injection moulding. As shown in Figures 1 and 2 the branch components are a Y-configuration comprising one entry end 8 leading to two exit ends 9 but it is possible that the branch components could be in other configurations such as comprising a single entry end leading to three exit ends or two or more entry ends etc.

The branch components connected together to form the branch network 7 provide an expanding number of pathways in two dimensions, for training in simple "left or right" manipulation of a fibrescope, or three dimensions for training in more complex manipulations of a fibrescope. Figure 3 shows a "map" of the pathways which may be used in training persons. A person may have the objective of manipulating the fibrescope through the mannequin to place the eye of the fibrescope at a predetermined point on the pathway "map" for example.

A predetermined symbol, object or image or a range of symbols, objects or images may be provided on the end 10a of the cap component which can be viewed through the fibrescope in use. Optionally the branch components may comprise additional apertures such as at 11 in Figure 2 to which cap components and components of various shapes may be fitted also carrying on the ends a predetermined symbol, object or image. A person training on the mannequin may have the objective of locating a particular object or image which can be viewed through the fibrescope, and manipulates the fibrescope to locate the correct object or image or one and then another object or image. The person may be able to view the object or image on a separate paper sheet or similar as well as through the fibrescope, to assist the person in becoming accustomed to the size of what is seen through the fibrescope relative to the actual size. The object or image may be incorporated into games.

Figures 4 to 9 show another preferred form of fibrescope training mannequin of the invention. These figures do not show a separate "body" as in Figure 1 but simply components which may be used to form an expanding number of pathways similar to the branch network 7 of Figure 1. The components of Figures 4 to 9 when assembled together to form a branch network may be housed within a "body" enclosure such as that of Figure 1 or similar or of any other suitable shape or form to simulate a patient, or alternatively may be used for fibrescope training without a separate "body" enclosure in which case the branch components themselves when assembled together form the training mannequin.

Referring to Figures 4 to 6, this form of mannequin comprises an oral and nasal cavity component 15, a number of Y-branch components 16 (only one of which is shown) which is similar to the branch component of Figure 2 and which is separately shown in Figure 8, and one or more components 17. In component 15 aperture 18 leading to passage 19 represents the nasal passage of a patient, and aperture 20 leading to cavity 21 represents the mouth and oral cavity of the patient. The passage from the back of the oral cavity 21 joins nasal passage 19 at 22 in the throat region of the mannequin. Protruding web 23 within the oral cavity 21 simulates the patients tongue.

As in the mannequin of Figures 1 and 2, Y-branch components such as that indicated at 24 in Figures 4 to 6 are connected to the oral and nasal cavity component 15 to form a branch network providing an expanding number of

pathways through which a user may practice in manipulating a fibrescope in training with the mannequin. Figure 7 is a cut away view through the oral and nasal cavity component 15 and one Y-branch component 24 connected thereto.

The exit ends (indicated at 25 in Figure 8) of those branch components 24 which are not connected to a subsequent component may be closed by caps 25 similar to the caps 10 in the mannequin of Figures 1 and 2, and again optionally the branch components 24 may comprise additional apertures in the side(s) of one or more branch components which are also closed by a cap - in Figures 4 to 8 a cap closing an aperture in a side of a branch component is shown at 27.

Component 17 shown in Figures 4 to 7 and shown in exploded view in Figure 9 has a hollow interior 28 and may represent an organ within the body such as the stomach or a lung. The entry passage to the component 17 expands into the internal cavity 28 and the component has an exit passage 29. The component 17 may be connected to the exit end of a Y-branch component 24, and at its exit end 29 may be closed by a cap 25 or may connect to a further component of the branch network.

In the preferred form the component 17 is made up of entry end part 17a, exit end part 17b, and one or more intermediate annular components 30 which clip together to form the whole item 17. The component 30 may include a rubber or synthetic diaphragm (not shown) with a central aperture which extends across the interior of the component 17, requiring in use that a user manipulate the fibrescope to move the end of the fibrescope through the aperture in the diaphragm. The aperture in the diaphragm may be off centre so that the orientation of the diaphragm may be changed by rotating the centre component 30. Gripping portions 31 on the exterior of the centre component 30 and optionally also the parts 17a and 17b of the component 17 may include markings which enable the rotational position of the components relative to one another to be determined from the exterior without breaking down the component. Two or three centre components 30 may be fitted between the entry part 17a and exit part 17b optionally each with a diaphragm with apertures which are off centre so that by rotating each of the two or three components 30 relative to one another, the mannequin may be set up with the diaphragm apertures misaligned to increase the level of difficulty for a user manipulating the fibrescope.

As referred to previously a symbol object or image may be positioned on the inside end face of the caps 25. Preferably the caps are asymmetrically shaped so that it is possible to determine from the exterior the orientation of an asymmetrical image on the internal end face of the cap, when setting up the mannequin before use. Any of the interior surfaces of the mannequin components may carry graphics simulating the interior of a body passage or organ to make manipulation of a fibrescope in a patient as realistic as possible.

The foregoing describes the invention including the preferred form thereof. Alterations and modifications as will be obvious to those skilled in the art are intended to be incorporated within the scope hereof.

WEST-WALKER BENNETT
Per:
ATTORNEYS FOR THE APPLICANT

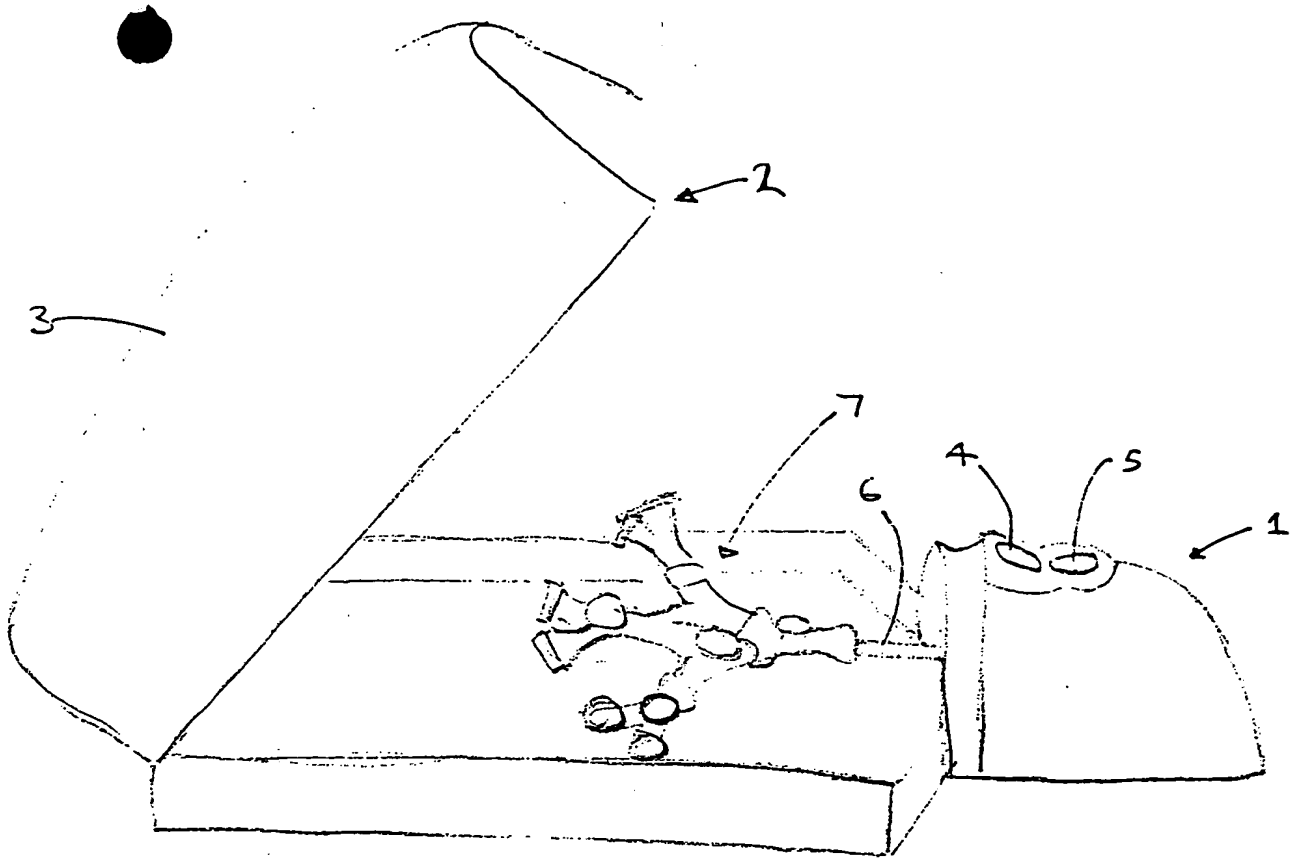


FIG 1

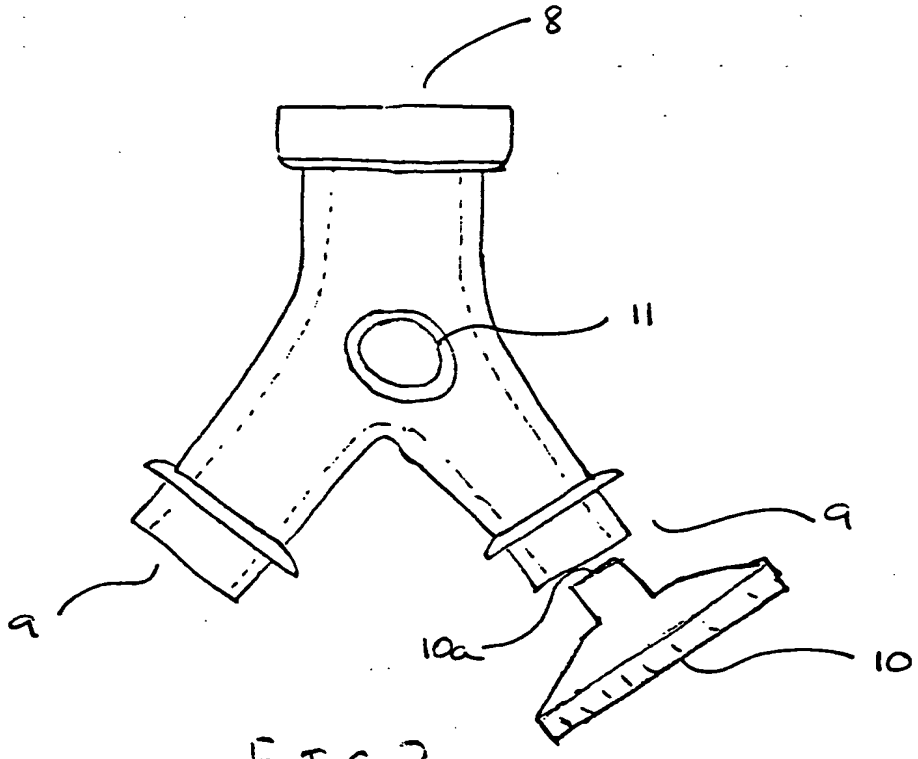
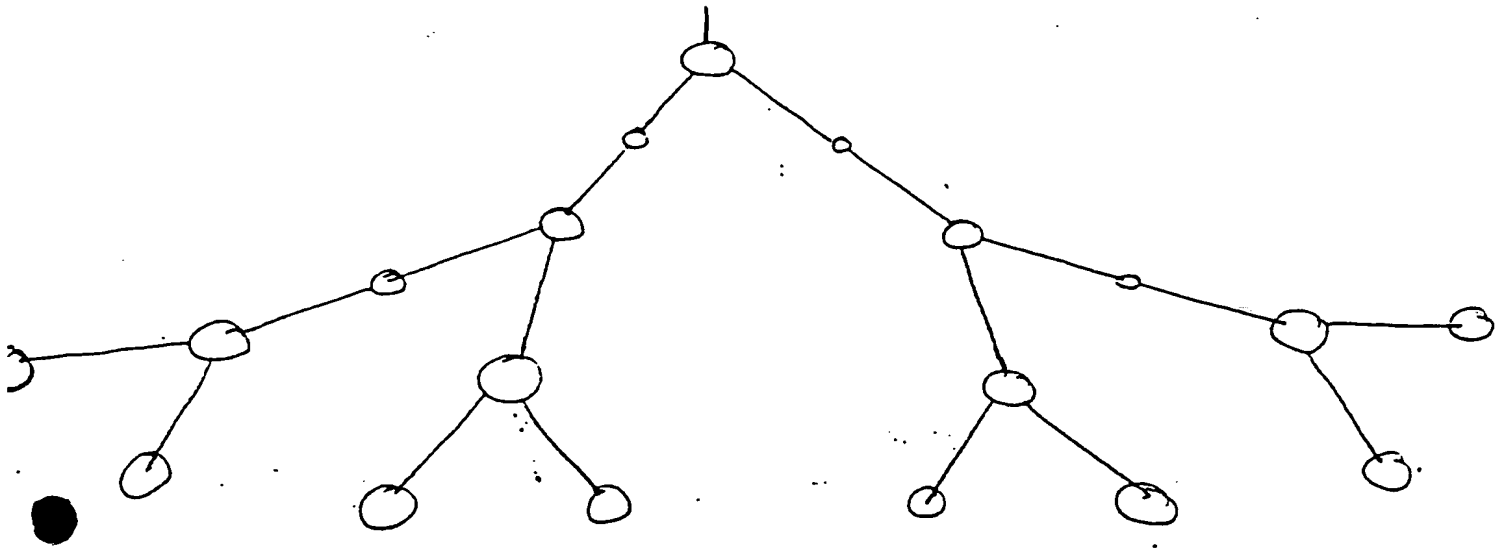


FIG 2



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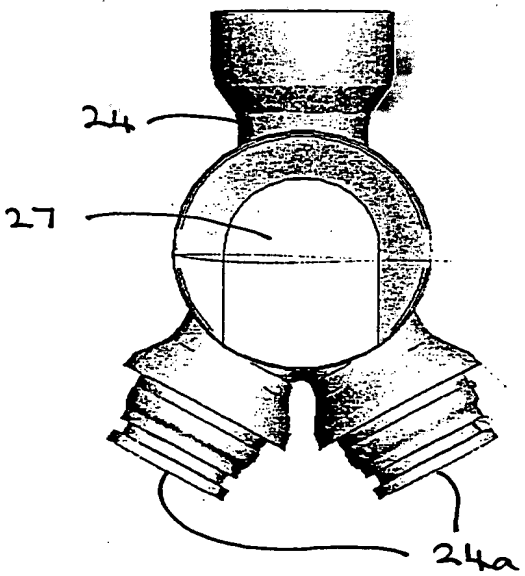


FIG 8

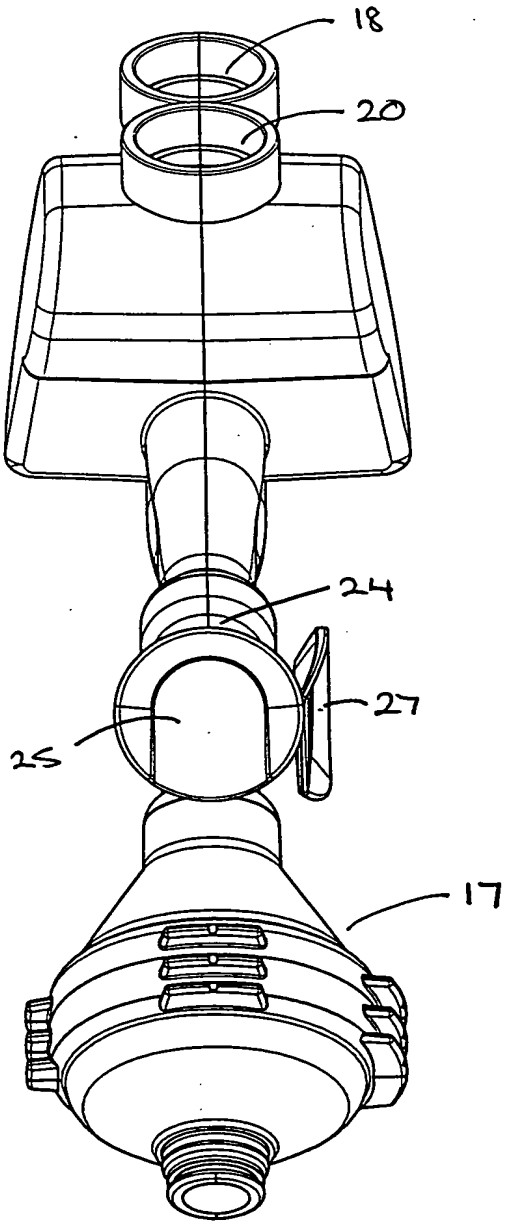


FIG 4

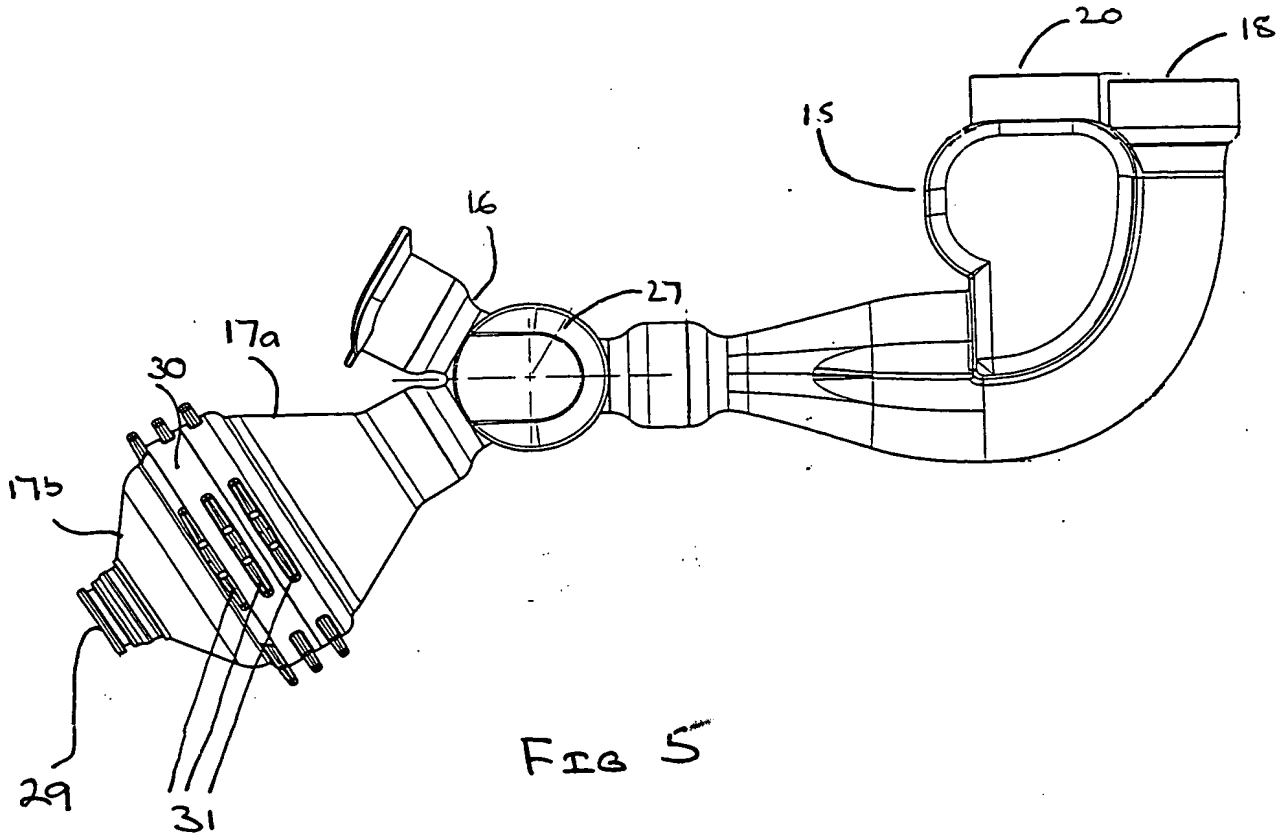
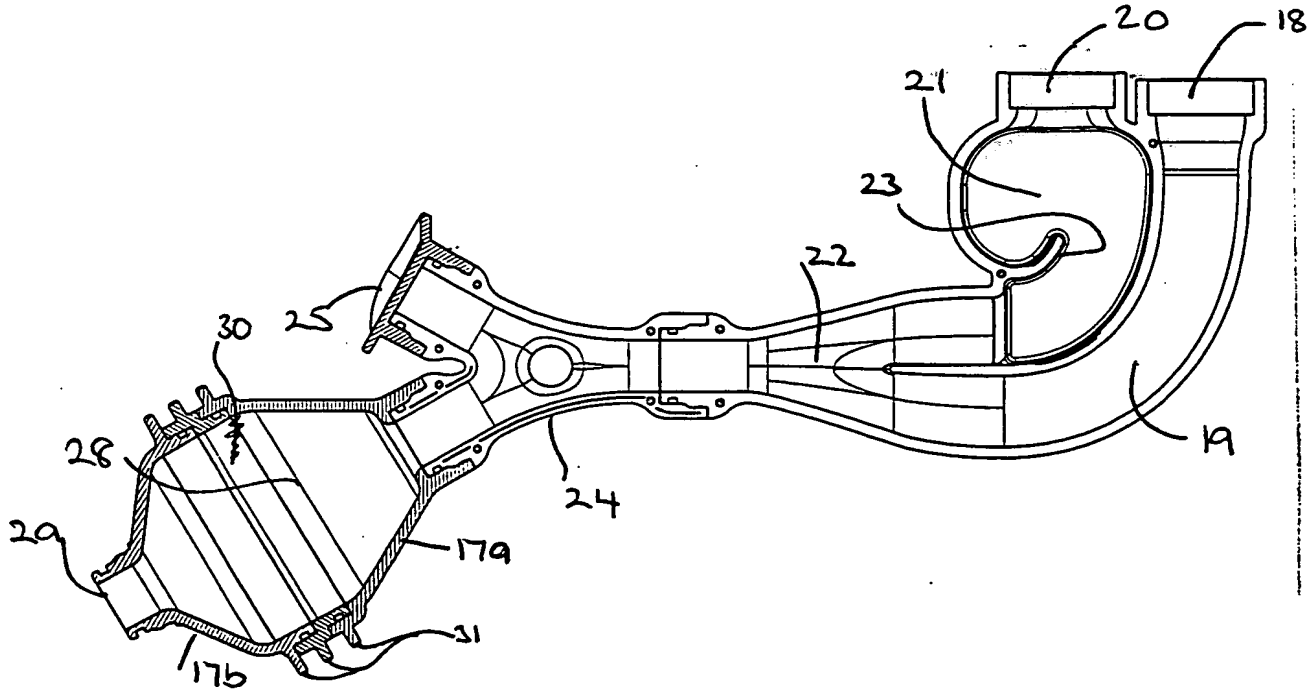

20
18
15
16
27
17a
30
17b
29
31

FIG 5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18
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22
30
25
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24
29
17a
19
31
17b

FIG 6

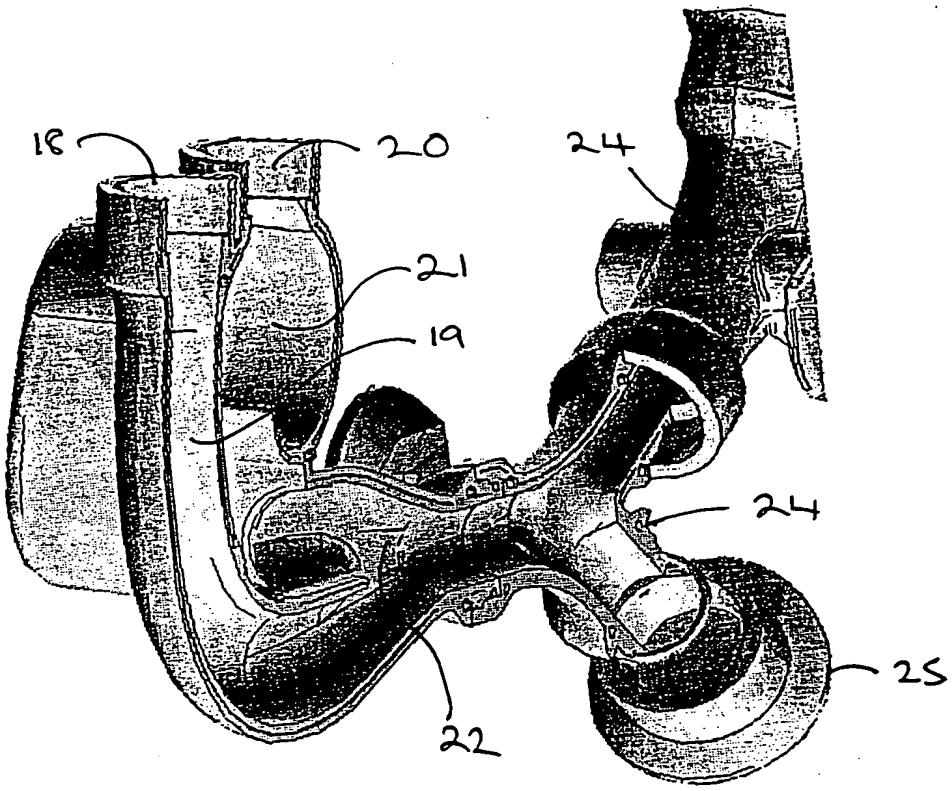

FIG 7

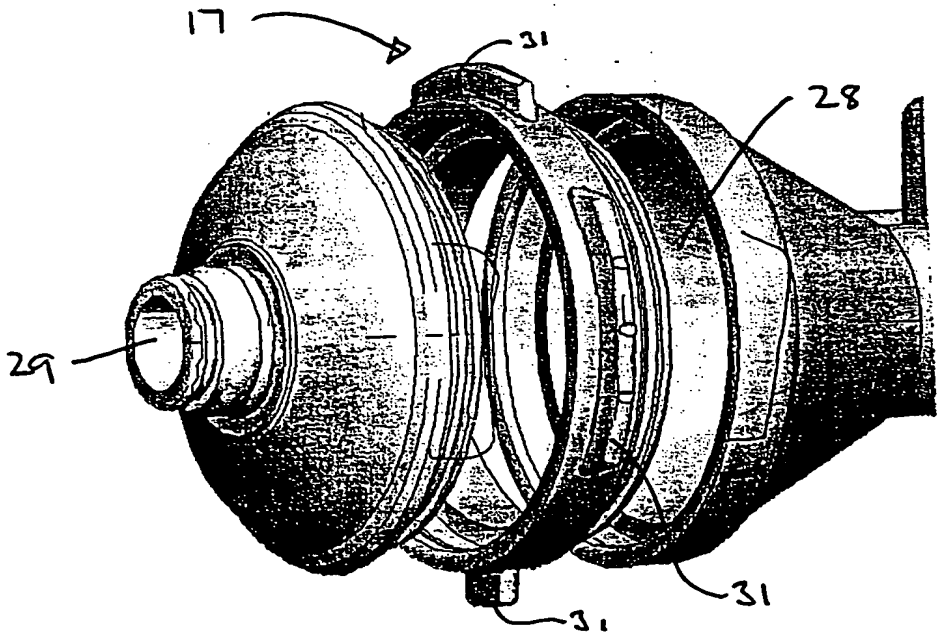

FIG 9